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STYLE MANUAL FOR USE IN COMPUTER BASED INSTRUCTION

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AIR FORCE SYSTEMS COMMAND
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The Public Affairs Office has reviewed this paper, and it is releasable to the National Technical Information Service, where it will be available to the general public, including foreign nationals.

This paper has been reviewed and is approved for publication.

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The style manual is designed to assist the Computer-Aided Instruction (CAI) author in developing CAI courseware. It is not intended to answer all questions regarding CAI development but is designed to serve as a guideline for basic style and format issues. This manual was used by all course authors in developing courseware for the Advanced On-the-job Training System (AOTS).

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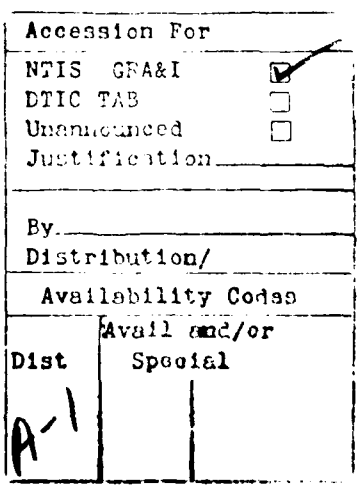
PREFACE

This Style Manual is designed to aid the CAI author in developing CAI courseware. It is not intended to answer all the questions regarding CAI development but is designed to serve as a guideline for basic style and format issues. This manual was used by all course authors in developing CAI courseware for the Advanced On-The-Job Training System (AOTS).



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STYLE MANUAL FOR USE IN COMPUTER BASED INSTRUCTION

Chapter 1

INTRODUCTION

This style manual was produced in conjunction with the Advanced On-The-Job Training System (AOTS) research program. The manual specifically supports the training development and delivery component of AOTS and is intended to aid the Computer Aided Instruction (CAI) author in developing CAI courseware.

1-1. BACKGROUND

In the Air Force (AF) environment, a large portion of enlisted skills and knowledges are taught through on-the-job training (OJT). The OJT system is therefore an integral part of the overall AF training system and vital to the success of AF operations. However, deficiencies in the OJT system began surfacing in the late 1960s and early 1970's. A number of factors contributed to these deficiencies including lack of training resources and qualified trainers, limited training opportunities, and insufficient application of state-of-the-art training technologies. In response to growing concern about these deficiencies, the Air Staff requested that the AF Human Resources Laboratory (AFHRL) conduct a study of the AF OJT system. This study was followed by a Functional Management Inspection (FMI) of the system.

The AFHRL study and FMI identified a number of specific OJT problems including inadequate methodologies for identifying training requirements; lack of standardization in task evaluation; lack of emphasis on job qualification training; focus on record keeping rather than training effectiveness; inability to determine unit training capacities; and use of training personnel to administer rather than develop, maintain, and manage training.

Air Staff developed and implemented several initiatives aimed at correcting the deficiencies identified by the AFRHL study and AF FMI. AFHRL, in particular, was tasked with the management and development of a prototype computer-based OJT system. The Laboratory's efforts resulted in the Advanced On-The-Job Training System (AOTS), which represents a proof-of-concept design for OJT automation. It was designed, built, and tested in an operational AF environment by Senior NCOs in accordance with Air Staff direction. The AOTS research program encompassed all components of the AF -- active, reserve, and national guard.

1-2. ADVANCED ON-THE-JOB TRAINING SYSTEM (AOTS)

AOTS integrates four training functions--management, evaluation, development, and delivery--into one system providing comprehensive coverage of OJT at the unit as well as higher levels. The Management Subsystem of the AOTS provides capabilities to manage training requirements and trainee progress, schedule training events, and identify resource requirements. Management of evaluation instruments, evaluation of trainees, quality control, and evaluation of the training system itself are accomplished in the Evaluation Subsystem.

Course curriculum, specifically CAI, can be developed and then delivered to the trainee using AOTS. The Training Development and Delivery Subsystem provides the user with capabilities to define course and lesson objectives, develop text and graphics, develop embedded test items, and incorporate branching instruction into lessons. Moreover, AOTS can deliver computer aided instruction and Interactive Video (IVD) to the trainees and provide trainee status updates with regard to courses and lessons.

1-3. INSTRUCTIONAL SUPPORT SYSTEM

Training development and delivery within the AOTS is accomplished using the Instructional Support System (ISS). ISS is a government-owned CBT system which combines both instructional and management capabilities into a single system. It is the successor to the Advanced Instructional System which was developed in the early 1970's for training and managing large numbers of students on mainframe computers. ISS, which is written in Ada programming language, can be transported to numerous host environments, from mainframes to microcomputers.

ISS supports a number of different instructional techniques including tutorials, drill & practice, simulations, instructional gaming, and testing. Curriculum development using ISS can be divided into nine major activities. These activities include areas such as lesson development, lesson presentation, testing, and management of curriculum, resources, and students. ISS can also generate reports to assess student performance across selected student groups and across selected curriculum material.

The remaining sections of this style manual provide guidelines for CAI development. The manual covers topics such as capitalization and punctuation, lesson development and structure, testing, and the use of graphics, warnings, acronyms. Once again, this manual is not intended to answer all the questions regarding CAI development but is designed to serve as a guideline for basic style and format issues.

Chapter 2

General Guidelines

2-1. CAPITALIZATION AND PUNCTUATION

Chapters 3 and 4 of this manual will be used for all questions relating to capitalization and punctuation. Chapter 5 will be used if further clarification is required on centering and spacing.

2-2. CENTERING

Center all text horizontally and vertically on the screen. It is important that the trainee views a balanced picture when sitting before the terminal. When centering for graphics, center tile text beside or beneath the graphic leaving at least THREE (3) blank columns or ONE (1) blank line between the text and the graphic.

2-3. USE OF COLORS

Using too many colors on one display overloads tile presentation and distorts the text. Whenever possible, use only YELLOW or GREEN to highlight the text. When using NOTES, highlight the word NOTE and the colon after it in GREEN. If you are using CAUTIONS, highlight the word CAUTION and the colon after it in YELLOW. All WARNINGS will be highlighted in RED. Again, highlight the word WARNING and the colon after it in RED. In all cases, text following the words NOTE, CAUTION or WARNING will be in white. As a general rule, DO NOT use any more than two colors, plus black and white, to highlight text on any one screen display.

2-4. QUESTIONS

a. An Awareness page WILL ALWAYS precede either a Practice Test or the Criterion Test. This page explains to the trainee that a test follows, what kind of test it is, how many questions are on the test and, if a Practice Test, what the minimum passing score is.

b. For all Practice Tests, information to the trainee if he passed or failed and what his next activity will be. For example, if the trainee fails the Practice Test, he might be branched back to reaccomplish the segment or module again. The trainee needs to be aware of what has happened and what will occur next.

c. ALL QUESTIONS (Multiple Choice, True/False, "Fill in the Blank", or Matching), will be identified as such at the top of each question frame. This identification will be in ALL CAPS, HIGHLIGHTED GREEN, AND CENTERED HORIZONTALLY IN THE FIRST FIVE LINES, EXCLUDING LINE ONE (1). DO NOT identify Touch questions in this same manner. Instead, highlight the word "touch" in your question stem.

(NOTE: This rule applies throughout the module/segment text; whenever the trainee is to touch something on the screen display, highlight the word "touch" in GREEN so it is perfectly clear what you want him to do.)

2-5. FEEDBACK AND PROMPTS

a. Feedback is associated with the particular response a trainee makes to a question. The feedback tells the trainee whether an answer is correct or, if incorrect, why it is incorrect. Prompts are associated with successive attempts to answer a question. If the question is answered incorrectly, the final prompt serves t critique the trainee to 100%.

b. Embedded Questions

(I) Feedback - Since this is not considered a test, you may use your own conventions for providing feedback, as long as they conform to the coloring/spacing/centering rules set forth in this manual.

(2) Prompts - Use prompts if you feel them necessary to help answer the question. Be sure to leave enough space between the feedback and the prompt so as not to confuse the trainee. PROMPTS ARE NOT REQUIRED FOR EMBEDDED QUESTIONS.

c. Practice Tests

(I) Feedback

(a) For the correct response, the feedback will say CORRECT!! in GREEN caps. If you wish to expand on the correct answer you may do so in the feedback, as long as that explanation is not a restatement of the correct answer or does not provide new information to the trainee. IT IS NOT MANDATORY TO PROVIDE EXPANDED INFORMATIONON FOR THE CORRECT RESPONSE.

(b) For the incorrect response, the feedback will say INCORRECT!! in RED caps followed by WHITE text (normal caps) explaining WHY the selected response is not correct. DO NOT GIVE THE CORRECT ANSWER AS PART OF THE FEEDBACK.

(2) Prompts

(a) The prompt serves to critique the trainee to 100%, therefore the correct response will be given as the last pass prompt. Leave all other prompts blank. For example:

> If you allow TWO (2) attempts on a particular question, leave the first pass prompt blank and give the correct answer in the second pass prompt.

(b) The prompt will always be displayed in green. If possible, attempt to start the text on a prompt on line 2 or 3 of the sp provided. This will prevent crowding the feedback text and confusing th trainee.

d. Pre/Post Criterion Tests

(I) Feedback

(a) There is no feedback for the correct answer on a Criterion Test.

(b) For the incorrect responses, the feedback will explain WHY the answer chosen is incorrect. DO NOT USE THE WORD INCORRECT!!" IN YOUR FEEDBACK FOR CRITERION TESTS.

(2) Prompts - There are NO PROMPTS for Criterion Tests.

Chapter 3

Block/Lesson Components

The following components (Paragraph 2-I through 2-10) are listed in the order they will appear in each module of instruction. Also included is a brief description of each to aid you in writing and organizing your modules.

3-1. DOCUMENTATION PAGE

a. This page identifies the author, the date the module was started "on-line", and the name of BOTH the block of instruction and the module.

b. This page will be updated for any major rewrite or presentation changes made AFTER the module is "on-line". Each update should include the date on which the changes are made and the Tech Order change causing the update.

3-2. ACTS LOGO

Use any acceptable logo (preferably the logo designed by the graphic artist creating the graphics for the module) and center the title of the module both vertically and horizontally on the right side of or beneath the LOGO. The module title will be in all CAPS and in white text (unless the logo contains the name of the module). Use the "Title Frame" listed on the frame type list for this page.

3-3. BIG PICTURE #1

a. This is the Content Diagram (CSD) of the entire block of instruction. The currently assigned/presented module in that block is shown in YELLOW. All successfully completed modules are Men shown in GREEN. There is no need to color modules the trainee has failed.

b. This CSD will show only the individual modules for EACH block. DO NOT snow any Criterion or Practice Tests on this CSD.

c. When creating this frame on the computer, designate it as an "Overview" frame.

d. If the block contains only one module, this CSD may be deleted.

3-4. BIG PICTURE #2

a. This is the CSD of the currently assigned module of instruction. DO NOT list any Practice Tests in this CSD, but be sure to include the Criterion Test(s) in their appropriate place. Use the same coloring rules as described in BIG PICTURE #1.

b. When creating this frame on the computer, designate it as an "Overview" frame.

3-5. RATIONALE

a. The Rationale briefly explains the trainee needs to learn the material. It provides the trainee with an understanding of the importance of the materials and how it relates to other modules in the block. It is nothing more than an Overview or a Motivation frame.

b. When entering the Rationale on the screen, be sure to leave ONE (I) blank line after the word "RATIONALE" and justify the text under the letter "R".

For example:

RATIONALE

This lesson synthesizes the knowledge from the two previous lessons on...

c. When creating this frame on the computer, designate it as an "Overview" frame.

3-6. INTRODUCTION (Optional)

Use this frame to present information that, while important enough for the trainee to know, is not important enough to test on either a Practice Test or a Criterion Test. Simple location of a panel could be presented here.

3-7. OBJECTIVE

a. Use common sense when developing CAI objectives, remembering what can and cannot be accomplished on the computer.

b. Normally, only module objectives are required but there may be times when you find it necessary to present segment objectives to further clarify your instruction. When using segment objectives remember they must all total and equate to the module objective(s).

c. When entering the objective(s) on the screen, always leave ONE (1) blank line after the word "OBJECTIVE".

For example:

OBJECTIVE

Recall the location, function and operation of the XYZ switch.

d. If you are presenting the objective in two or more segments, use a BLUE arrow to indicate to the trainee which objective you are about to cover.

For example:

OBJECTIVE

Recall the function and operation of M-16 rifle

1. The selector switch
2. Bolt assembly

DO NOT use the BLUE arrow if you intend to teach the entire objective in only one segment as in 2-6c.

e. For all objectives, use the "Statement of Objective Frame" listed on the frame type list.

3-8. MAIN IDEA (Light Bulb Graphic)

a. The Main Idea is a "layman's" version of a segment objective or subobjective. If only one segment is being presented, it could also equate to the module objective. It fulfills the purpose of concisely telling the trainee what it is they are to learn.

b. The function of the selector switch (or information similar to this) WILL NOT be presented as a Main Idea. DO NOT use two Main Ideas in a row without any supporting text in between. If you find it necessary to do this, combine the two Main Ideas into one.

c. The trainee's instructional materials following the Main Idea should be an expansion on the material mentioned in the Main Idea. The Main Idea is only a summary of the information that follows.

d. Use the graphic "MAIN IDEA" for all Main Ideas. Additionally, use the "Statement of Objective Frame" listed on the frame type list for all Main Ideas.

e. Leave TWO (2) blank lines between the graphic "MAIN IDEA" and the first line of text. The box around the Main Idea test will be started on the blank line above the test (below the graphic) and extend to ONE (1) line below the last line of text. Justify the text under the letter "M" in MAIN IDEA.

For example:

MAIN IDEA (Light Bulb Graphic)

The XYZ components are the primary means of applying power to the RE-4C.

---

f. You should place only ONE Main Idea and its supporting text in a single segment.

3-9. TEXT

a. This is the heart of the instructional material. Any information, including graphics, that helps the trainee to better understand and remember the Main Idea is considered to be text. Present the material as you would present material to a trainee, one on one.

b. The text WILL NOT crowd the graphics. Leave at least THREE (3) blank columns or ONE (1) blank line between the graphic and the text.

c. When using an abbreviation for the first time in a lesson, use the entire name AND the abbreviated form and highlight both in YELLOW. You may hereafter use the full name or the abbreviated name, whichever you feel is best.

d. During initial development of a lesson do NOT use more than two pages on each frame (one page per frame is preferred).

3-10. TESTS

a. Embedded Questions and Practice Tests

(1) Embedded Questions and Practice Tests synthesize the knowledge and skills taught in the lesson and provides the trainee with an opportunity to practice remembering and/or using the information BEFORE taking the Criterion Test. Additionally,

Practice Tests serve as GO-NO-GO points to discourage the trainee from taking the Criterion Test before he is ready.

(2) Information not tested by either a Practice Test or a Criterion Test can be presented in Embedded Questions. DO NOT identify Embedded Questions like you identify the other question types. Unlike other questions, the Embedded Question is designed as an intra-segment review or for trainee interaction and therefore, does not need to be identified as a question to the trainee (e.g., you don't need an all-capitals green text header above the question).

(3) See Chapter 7, Test Development Guide, for the proper procedures to construct the various types of tests.

(4) Do NOT test trivial information with Embedded Questions.

b. Pre Tests

(1) Used to determine what trainees already know or can do before receiving instruction.

(2) Measures the trainees ability to meet each criterion objective.

c. Criterion Tests

(1) The Criterion Test is designed to evaluate whether or not the trainee has achieved the objectives of the module. When you develop the Criterion Test, compare it against the module objectives.

(2) TRUE/FALSE QUESTIONS WILL NOT BE USED IN CRITERION TESTS

(3) The Title Frame for the Criterion Test will give the title of the module beginning on line #10, the text "CRITERION TEST" centered three lines below it with a box surrounding them both. Use capital letters with cyan coloring for all text inside the box.

For example:

ELECTRICAL SYSTEM
ABNORMAL OPERATION

CRITERION TEST

---

(4) Beginning on line #19 type in the statement below using all capital letters:

YOU MUST PUT AWAY ALL YOUR NOTES
AND
ALL REFERENCE MATERIALS BEFORE TAKING THE CRITERION TEST

(5) The statement (above) should have all lettering colored red.

(6) Center ALL text on the Title Frame at column #40 (use the "y" key).

2-11. GRAPHICS

a. Use the graphics whenever possible to help get your Main Ideas across. However, too many graphics will crowd the display, and also confuse the trainee as he views the information on that display.

b. As a general rule, remember these guidelines:

(1) If a trainee can read your text and understand it completely without looking at your graphics, you aren't tying your text to your graphics or else you're failing to use graphic overlays.

(2) A trainee should not see more than two consecutive frames of instructional text without graphics on the computer screen.

(3) A trainee should not see text windowed-in next to a graphic for more than two or three consecutive pages without a change in the graphic (e.g., change in highlighting, movement of a switch, or illumination of a light).

(4) Design a lesson so that a complex graphic, such as a graph chart or map can be used (or modified) several times in the learning sequence.

(5) Use color to code, differentiate, or highlight parts of a graphic. Use cuing devices such as arrows or boxes to focus the trainees attention on key elements. Always identify the graphic, its key elements, and its purpose with text.

(6) If the graphic is subordinate to or supportive of the text, place the graphic with the body of the text at a logical break, or to the side of the text. If the graphic is to be the focus of attention and the text explains or asks questions about the illustration, place the illustration above or to the left of the text.

c. Identify on the Graphic Design Sheet (GDS) WHERE you want the graphic placed. This will aid you as you build your module by keeping adjustments to graphic movement minimal. The Graphic Artist(s) will build your graphic as you want it, where you want it and to the size you want, as long as you show it on the GDS. Indecision on your part only causes confusion and frustration on theirs.

3-12. SEGMENTS

For all modules obey the following rules:

a. Segment 0: Document here the name of the module's author and the date the on-line development/revision began.

b. Segment 1: Place the module's Title Frame, Big Picture #1, Big Picture #2, Rationale Statement, and any introductory material here.

c. Segment 2: The Objective, Main Idea and supporting text is here. Place only one Main Idea and its supporting text in each segment.

d. Each Practice Test (including the Awareness Frame preceding the test and the Pass/Fail Frames after the test) will be contained in a separate segment.

e. The Menu Frame which allows the trainee to review any of the Main Ideas prior to the Criterion Test is placed in a separate segment. place the Menu Frame as the first frame in the segment. The second frame will be the Title Frame for the Criterion Test.

f. Put the Criterion Test questions, excluding the test's Title Frame, in a separate segment. The segment containing the Criterion Test should have no counters or branching logic. NO instructional frames are allowed in the Criterion Test segment, ONLY question frames.

3-13. FLAGS

Remember that when going from one frame to the next, the computer will follow the directions found in the branching logic before "reading" any flags you have placed on that frame.

For example:

Suppose a trainee fails a Practice Test. On the frame you use to tell him he has failed, you add a Break Flag and Branching Logic to send him back to the beginning of the lesson. The computer will branch him back to the starting point of the lesson and the trainee will never be given the opportunity to take a break.

3-14. MODULE STRUCTURE

On the following two pages are examples of how to organize a module. The first example shows how to structure a module containing a large amount of instructional material. Because of the amount of instruction, you need at least one Practice Test during the lesson.

The second example shows how to structure a small module (i.e., Electrical System Malfunctions, wherein each malfunction or group of malfunctions is covered in a separate segment) Since the entire module is relatively small, there are only one or two review questions at the end of each segment of instruction. Of course, in both examples the Criterion Test is at the end of the module.

Chapter 4

Capitalization

4-1. WARNINGS, CAUTIONS, AND NOTES

a. Headings on all three: capitalize all letters in the words WARNING (use red text), CAUTION (use yellow text), or NOTE (use green text). (You may also use the graphics named "WARNING" and "CAUTION".)

b. Text on all three, use normal capitalization.

4-2. PARTS

a. RULE. Do not capitalize the name of a part to emphasize material (use highlighting techniques).

b. EXCEPTION: If name is ordinarily capitalized.

4-3. NAMES

a. MILITARY TITLE. Capitalize the first letter in each word.

b. TRADE NAMES. Capitalize the first letter in each word of the phrase, including the word TECHNICIAN or MECHANIC: Airframe Systems Technician. Capitalize the "T" in the word TRADE if it is used in conjunction with a proper noun. Example: Airframe Trade or Aero-Engine Trade.

c. GOVERNMENTS. Capitalize the first letter in each noun.

d. POLITICAL DIVISIONS. Capitalize the first letter in each noun except for the words PARTY, MOVEMENT, or PLATFORM.

e. MILITARY UNITS. Capitalize the first letter in each noun: First Battalion.

f. TOPOGRAPHICAL NAMES. Capitalize the first letter in each word for names of mountains, rivers, oceans, islands, etc.: Bering Strait.

g. GOVERNMENT PROGRAMS. Capitalize the first letter in each word: Marshall Plan.

h. LAWS AND PRINCIPLES. Capitalize proper names attached to labels for laws and principles: Boyle's law; general theory of relativity.

4-4. ACRONYMS.

Capitalize all letters unless convention dictates a variation. Do not use periods. Example: AFSC

4-5. BOOK TITLES.

Capitalize all letters. Example: WAR AND PEACE

4-6. MAGAZINE/NEWSPAPER TITLES.

Capitalize all letters. Example: THE ATLANTIC

4-7. NAMES OF SHIPS, AIRCRAFT, SPACECRAFT.

Capitalize all letters. Example: SS UNITED STATES

4-8. FOREIGN WORDS.

Use capitalization in lieu of italics.

4-9. LETTERS AS NAMES OR DESIGNATORS.

a. GENERAL. Capitalize a letter and place it in quotation marks. Example: If "A" stands for the right engine...

b. STEP DESIGNATOR. When referring to a step name, step letter, or step number (in a question or in the text), use a lead cap on the word STEP and place the name, letter, or number in quotation marks. Follow capitalization of reference text. Example: Now look at the T.O. and follow Step "e".

4-10. FOLLOWING ELLIPSES IN A QUOTATION.

a. THREE-DOT ELLIPSES (within a sentence). Do not capitalize the first letter of the first word following this form of ellipsis. Example: "This is...the hydraulics system."

b. FOUR-DOT ELLIPSES (between sentences). Capitalize the first letter after this form of ellipsis even though that letter may not be capitalized in the original material. Example: "system... The engine is here."

4-11. IN OUTLINES.

a. ROMAN NUMERAL SECTIONS. Capitalize the first letter of each word.

b. SUBDIVISIONS BELOW THE ROMAN NUMERAL LEVEL. Capitalize the first letter of first word.

c. WRAP-AROUND LINES WITHIN UNITS. Do not capitalize the first letter of the first word. EXCEPTION: Words that ordinarily call for capitalization.

d. TABLES.

(1) Table number. Capitalize the first letter of first word.

(2) Title. Capitalize the first letter of major words.

(3) Column heading. Capitalize the first letter of first word.

(4) Entry. Capitalize the first letter of first word.

4-12. AFTER A COLON.

Do not capitalize the first letter of the first word that follows a colon, even if the material to the right of the colon is a full sentence.

4-13. AFTER A HYPHEN.

If you insert a hyphen between two adjectives and the first adjective gets a lead cap, do a lead cap on the second adjective. Example: Spring-Loaded Switch.

4-14. IN QUOTATIONS.

a. If quotation is embedded in the sentence, do not capitalize first letter of the first word. Example: The stated purpose "to create harmony".

b. If the quotation stands alone, capitalize the first letter of the first word. Example: He said: "Go forth and build AOTS".

4-15. SEASONS.

Do not capitalize. Example: Now that spring is here, a young man's fancy turns to new defense contracts.

4-16. DIRECTIONS.

Do not capitalize. Example: He flew the plane north instead of south.

4-17. GEOGRAPHICAL REGIONS.

Capitalize the first letter. Example: The Near West is not well known for its seafood.

4-18. NOMENCLATURE.

a. NOUN-ONLY NAMES. Lower case--regardless of what the T.O. says. Examples:the engine, the panel.

b. ADJECTIVE/NOUN COMBINATIONS. If the complete technical name contains an adjective, use lead caps--regardless of what the T.O. says. The generic indicator should also receive a lead cap. Example: Right Engine, Nose Wheelwell, APU Switch.

c. SHORTENED VERSION OF LONG NAME. If you shorten long names that required lead caps, retain the lead cap on subsequent references to that name. Example: If you refer to the Radar Liquid Cooling Pump as "the Pump", retain the lead cap on "Pump".

d. EXCEPTIONS.

(1) Acronyms. Capitalize all letters; use no periods. Example: APU

(2) Indicated Conditions

(a) If you refer to a condition/indication with a verb phrase, do not capitalize. Example: The generator light failed; fluids are low.

(b) If a crewmember performs an action or if mechanical functions indicate that a condition exists, use all caps. In other words, if a gauge, dial, display, etc., provides a visual/audio signal that a condition exists, that INDICATED CONDITION needs to be noted through capitalization.

(3) Indication. If the indication/condition nomenclature involves a part, capitalize the first letter of each word.

NOTE: Indication as a part is different from an indicated condition.

Example: Fluids Low Indicator

(a) If the indicator carries an Alpha number/numeral, capitalize all letters in the Alpha portion of the unit name.

(4) Inspection. Lead caps for the first letter of each word in each inspection type. Examples: PreFlight Inspection; Fluids Level Check

(5) Codes/Displays. Capitalize the first letter in words such as CODE and DISPLAY. Example: NAV/AUX Code Display.

(6) Switch Positions.

(a) If you refer to a switch position in a verb phrase, do not capitalize. Example: Turn on the switch. (turn on is the verb phrase).

(b) In any other cases where you indicate a switch position, capitalize all letters. Example: This switch has three positions: ON, HOLD, and CLOSE. Turn the switch to ON.

(7) Word Used as Word and Generic Identifier. Word used as a word gets all caps. Generic Identifier gets lead cap. Example: FLUIDS LOW Indicator

Chapter 5

Punctuation

5-1. ASTERISK.

Do not use an asterisk to indicate a footnote; instead set up a note.

Example (BAD): It is a test for the NWW DDI LEDs. It shows....

*An LED is a light-emitting diode.

Example (GOOD): It is a test for the DDI LEDs. It shows....

NOTE: An LED is a light-emitting diode.

5-2. COLON.

a. FORMAT. Double space after a colon.

b. RULES.

(1) Introduce a quotation with a colon. He said: "Go forth."

(2) Use a colon after a step number if the step number is centered horizontally on the page.

c. USES.

(1) To introduce lists.

(2) To link two sentences when the second sentence explains t first.

5-3. COMMA.

a. RULES.

(1) Use commas to set apart nonessential elements of the sentence (do not use commas to set off essential elements).

Example of Nonessential1: Jack, who is French, has worked maintenance for ten years.

Example of Essential: The lesson that the AOTS authors prepared is well written.

(2) Place a comma inside quotation marks if the comma is related to the quotation; in all other cases, place it outside.

(3) When clauses in a compound sentence are joined by a conjunction, place a comma before the conjunction. Example:

AOTS has a sophisticated computer system, but it doesn't require a great deal of maintenance.

(4) If a sentence has a predicate with only two units, do not place a comma between the units. Example: The RF-4C fuel flow system may be activated by motive flow but also may be activated by an electrical pump.

b. USES.

(1) To address a speaker directly (i.e., Jack, I want you....)

(2) To distinguish units in a geographical name or address (i.e., Syracuse, New York)

(3) To set apart a parenthetical expression (i.e., The engine, however, was not ready)

(4) To set off introductory elements in a sentence (a prepositional phrase longer than five words or a shorter, confusing one). Example: If the AOTS training philosophy is correct and if AOTS is constructed according to specifications, AOTS should reduce training time.

5-4. PERIOD

a. FORMAT.

(1) Used after sentence in text, one space.

(2) Used after number of letter in outline, one space.

b. RULES.

(1) Do not use a period at the close of units in a formal outline or a vertical list unless the unit is a full sentence. Example:

The plane has these features:

- Stability

- Maneuverability

OR

The plane has these features:

- It is stable.

- It is maneuverable.

(2) In an outline, use a period after Roman numerals, letters, and Arabic numbers. If parentheses are used, do not add a period.

(3) Use a period after an abbreviation.

(4) Do not use periods in an acronym. EXCEPTION: If lack of punctuation could mislead the reader: TO (for Technical Order), instead render as T.O.

(5) Place the period inside quotation marks if it punctuates the quotation; in all other cases, place it outside the quotation.

(6) Omit the period at the end of a sentence that is included within another sentence. Example: The snow (I caught a glimpse of it as I flew over Minot) was falling heavily.

5-5. SEMICOLON.

a. FORMAT: No space before, one space after.

b. RULE: Place semicolon outside quotation marks.

c. USES

(1) Between two sentences not connected by a coordinating conjunction (and, or, but, etc.).

(2) Between sentences the author wants to join by using the words therefore, so thus, consequently, however, moreover, nevertheless, still, then, hence, indeed, and accordingly. Example: He wants to become an AOTS author; therefore, he reads the CASS manual carefully.

(3) Between items listed in a series if any item has internal punctuation. Example: Three authors have 60 years of combined experience: John, who has 15 years; Jan, who has 25; and Bob, who has 20.

5-6. DASH.

a. FORMAT: Two hyphens; no space before or after.

b. RULE: Do not use a dash as a pong for an item at the beginning of a list; use a hyphen.

c. USES.

(1) To emphasize text that follows. Example: CAI has several advantages--individualization and English language access to the computer.

(2) To indicate sudden breaks.

5-7. PARENTHESES.

a. FORMAT.

LEFT PARENTHESIS: One space before, no space after.

RIGHT PARENTHESIS: No space before, one space after.

EXAMPLE: That man (who is a fiendish devil) has no scruples whatever.

b. RULE: Do not use for Roman numeral or capital letters.

c. USES.

(1) To enclose letters that show options: engine(s).

(2) To enclose references and directions. Example: (for example, see the directions above).

(3) To set off supplementary or illustrative material.

5-8. HYPHEN.

a. FORMAT: No space before or after (except when used as a pong in a list).

b. RULES.

(1) Use as a pong before items in a list (include a blank space between the hyphen and the first word in the item)

(2) Use with compound numbers: from 21-99; twenty-one.

(3) Use with fractions: three-fourths

(4) Use in writing compound words: quasi-realistic

(5) Use in compounds with numbers and units of measure: 37-year-old man; 19-story building.

(6) Use in phrases that modify a noun: price-to-earnings ratio.

(7) Use after a prefix added to a word starting with a capital: un-American.

5-9. QUOTATION.

a. FORMAT.

(1) For quotations up to 100 words of prose

(a) Run the quotation into the text.

(b) Place the material in quotation marks.

(c) Add no space between the quotation mark and the material to be quoted. Example: The training philosophy "is essential to the AOTS project".

(2) For quotations over 100 words of prose

(a) Double space above and below.

(b) Indent five spaces on the left and right.

(c) Single space the quoted material.

(d) Use no quotation marks unless there is a quote within the quotation.

5-10. QUOTATION WITHIN A QUOTATION.

a. FORMAT.

(1) Double quotation marks on the outside.

(2) Single quotation marks on the inside.

(3) No space between double and single marks.

(4) Use quotation marks to punctuate short works or sections of books.

(5) Do not use quotation marks to set off words used in a special or technical way (use highlighting techniques).

5-11. ELLIPSES.

a. FORMAT.

(1) Three dot.

(a) One space before and after ellipses.

(b) One space between dots in the series.

Example: "An AOTS . . . is still relatively inexpensive."

(2) Four dot: The first of the four periods marks the end of tile sentence. The remaining three periods signify the omission of one or more complete sentences.

(3) Line.

(a) Extend ellipses same length as the longer of the lin above or below.

(b) One space between dots.

(c) Double space above and below the ellipses.

Example: "The end of one paragraph.

. . . . . .

The beginning of the next paragraph."

b. RULES.

(1) Use three-dot ellipses to display individual items or to connect a series of loosely related phrases, to indicate a sentence trails off before the end, to create an effect of uncertainty, or to omit words within a quoted sentence.

(2) Use four-dot ellipses if one or more sentences are omitted between other sentences with a long quoted extract.

(3) Use line ellipses when you omit the end of a paragraph or if you omit one or more paragraphs.

(4) Do not use ellipses at beginning or end of a quote.

c. USES.

(1) To indicate omissions from quoted text.

(2) To indicate that another page follows the present page (not to be used in courseware).

Example: On page two of a document, the author inserts a three-dot ellipsis and the number "3"--at the bottom of tile page:
. . . 3

5-12. APOSTROPHE.

a. FORMAT.

(1) No space before
(2) No space after unless the word ends

b. RULES.

(1) You may use contractions, such as: it's, let's, and he's.

(2) Use an apostrophe to show possession except with the following words: its, his, hers, yours, theirs, or whose.

c. USES. To show possession. Example: The fighter's radar capability is significant.

5-13. ITALICS.

Since CASS presently does not provide an italics or underlining function, capitalize any material you would ordinarily place in italics: book/magazine titles, words used as words, and foreign words.

5-14. BRACKETS.

a. FORMAT: No space between bracket and material to be enclosed. Example: "He [General Doe] has issued an order."

b. RULE: Do not use square brackets as a substitute for parentheses.

c. USES.

(1) To enclose editorial interpolations, corrections, and explanations in quoted material.

(2) To act as parentheses within parentheses. Example: "(this is what he [General Doe] wants)"

5-15. EQUAL SIGN.

a. In text: Do not use equal sign in text. Spell out the word "equal". Example: An open latch equals (or is equivalent to) ON in a Fluids Check.

b. In a formula: no space on either side of the equal sign. Example: E=MC2

c. In lists/headings: one space on either side. Example: Latch = ON

Chapter 6

Centering/Spacing

6-1. BASIC INFORMATION.

a. COLUMNS AVAILABLE.

(1) CAI display: 80 (authors do not have 80 characters for CASS use)

(2) CASS text: 63 characters

(3) CASS graphics: 74 characters

b. MAXIMUM CHARACTER COUNT: For a line of text to center in CAI: 63 characters.

c. VERTICAL CENTER: lines 10-11 (we will use this convention even though center is actually between lines 15-16).

d. ROUNDING OFF UNEVEN NUMBERS: Round up. Example: 25 Round up to 26 (divide in half for centering gives you 13) With an uneven number of characters or lines, go heavy to the left and top portions of the screen. Example: Place 16 characters to the left and 15 to the right of the horizontal center line.

e. RULE: Center on CAI screen display even though blocks of material in CASS will appear to be off center. These centering conventions apply when a page contains no graphics. When a graphic is present, it will take up a number of horizontal characters and vertical lines (block "A"). The remaining space on the page might be called block "B". On a page with a graphic, apply the centering conventions within the remaining space (block "B").

Example: If the graphic consumes 20 horizontal characters, leaving 43 characters in CAI, center the text for the page within the 43 character block. Thus, the center would be on character "17".

6-2. HORIZONTAL CENTERING.

a. TEXT ONLY.

(1) When you enter the text the first time, center the longest line of text on the page. Left justify all other lines on the page against the longest line.

(2) If the author uses an overlay series: left justify subsequent pages in the series against the longest line on the first page in the series.

(3) Example of Text Only centering:

Does the AOTS have tile capability
and flexibility to allow it
to save and enhance a supervisors
immediate training needs?

The longest line in this four-line sequence is line three.

b. TITLES/HEADINGS.

(1) Table title: place on CAI display center.

(2) Graphics title (if graphic has a title)

(a) Center the title on the graphic (including labels related to the graphic).

(b) Place the title above the graphic.

(c) Place the title far enough above the graphic that it will not be confused with labels or other text.

(d) If the title has wrap-around lines, center all subsequent lines. Multiple-line titles will riot show up often because titles must be brief.

6-3. VERTICAL SPACING.

a. WITHIN A UNIT OF TEXT: Use single spacing. Do not use double spacing for aesthetic effect.

b. BETWEEN UNITS OF TEXT.

(1) Double space between paragraphs or to separate small units of material from one another.

(2) If you wish to improve the aesthetic appearance of a page, move whole blocks of text; do not double space for aesthetic purposes.

c. TITLES.

(1) Heading (or table) plus text: double space between title and text (i.e., leave one blank line).

(2) Example of vertical spacing on title and text:

AOTS MISSION READINESS

Many of these terms should be familiar to you.
If you know their meanings, proceed to the
next frame.

(3) Graphic title: Double space between last line of graphic title and graphic.

d. TITLE AND A BOX: Triple space between the title and the first line of boxed text (i.e., leave two blank lines)

Example of vertical spacing of title and box:

AOTS MISSION READINESS

Many of these terms should be familiar to you.
If you know their meaning, proceed to the
next frame.

CHAPTER 7
CAI MODULE REVIEW & SIGN OFF

1. Establish milestones for module completion

I: _____
D: _____

2. Author writes module

I: _____
D: _____

3. Technical review by team members

I: _____
D: _____

4. DAC review of module

I: _____
D: _____

5. ISD review module

I: _____
D: _____

6. Author Corrects

I: _____
D: _____

7. Begin graphics production

I: _____
D: _____

8. Approval for system entry

I: _____
D: _____

9. Author inputs module into system

I: _____
D: _____

10. DAC reviews module in system

I: _____
D: _____

11. CAI Mgr reviews module in system

I: _____
D: _____

12. Author corrects

I: _____
D: _____

13. Validation/minimum of two tryouts

I: _____
D: _____

14. Superintendent/OIC

I: ____
D: ____

15. Review Board

I: _____
D: _____

Chapter 8

Test Development Guide

As previously stated, AOTS divides evaluation into two categories; Performance Evaluations (Performance Measures) and Knowledge Evaluations (Knowledge Tests). Performance Evaluations are generally considered to be off-line. This does not mean that a Performance Evaluation, such as filling out a form, cannot occur on-line, nor does it mean that a Knowledge Evaluation cannot be printed and presented off-line. The important thing to remember is that the concepts outlined for selecting strategies and developing test items are universal and overlap each other. The objective is to develop evaluation instruments that will determine if an individual can perform all the necessary aspects of a task.

8-1. MULTIPLE CHOICE TEST QUESTIONS.

a. Multiple choice test items are not difficult to write provided a few basic concepts are understood.

b. First, the question (stem) must be a question. It must be a complete sentence with subject and predicate. The stem must identify a central problem that is contained in the behavioral objective and must be specific. The trainee should be able to answer a properly worded stem without looking at the distractors. So-called trick questions should not be used. The purpose is to determine if the student has the task knowledge necessary for position qualification, not to test reading ability.

c. Second, the correct answer must be the correct answer and the only correct answer. It must answer the question that was asked in the stem.

d. Third, the incorrect answers, called distractors, must seem to answer the question to someone who does not know the correct answer. In other words they must be plausible but incorrect. The correct answer and the distractors must be parallel in construction and content. Don't mix apples and oranges in the distractors. If the question is about forms then possible answers should be forms. "None of the above" or "all of the above" are not good distractors. The distractors should be ordered from long to short or short to long. Avoid a pattern of having the correct answer be the longest. Numerical distractors should be ordered least to largest. Always attempt to have an equal mix of A, B, C, and D for the correct answers.

e. Fourth, use exception questions only when the exception is critical to the task. In other words don't ask what not to do unless serious repercussions would result from the action or there is a recurring problem with incorrect actions by the personnel in the work center.

f. Some examples of correctly worded multiple choice questions are:

Which automobile make is rated, by -the United States Government, as obtaining the best overall gas mileage?

A. Volvo
B. Datsun
C. Volkswagen
D. Mitsubishi

Note that the question is asking for automobile makes, not models. There may well be an automobile model that gets better gas mileage but that's not the question. There may be other sources that contradict the U.S. Government but the question does not ask for their ratings.

g. A common mistake in test writing is to leave out the antecedent of a pronoun. In this example the antecedent of "which" is "automobile make". Without it the question would read "Which is rated by the United States Government as obtaining the best overall gas mileage?" That question cannot be answered by reading the stem. Is the question asking about automobiles, trucks, tractors, or aircraft? If the trainee is supposed to read the question, there must be a question to read.

Which of the following aircraft can exceed the speed of sound?

A. F-4, B-52, and FB-111
B. B-52, FB-111, and C-5
C. FB-111, C-5, and F-4
D. C-5, F-4, and B-52

h. In this example note that each of the distractors has three aircraft listed and that each aircraft is listed a total of three times. There is no discernible pattern that would clue the correct answer. The stem has also changed. "Which of the following" indicates that there is more than one aircraft that can break the sound barrier and the trainee is to identify some of them. This methodology can be used when more than one concept needs to be addressed in a single question.

What DOS control character keys stop scrolling on a Z-248 personal computer?

A. Ctrl P
B. Ctrl Q
C. Ctrl S
D. Ctrl Z

Note that the distractors are in alphabetical order. The question is such that is can be answered without looking at the distractors. All of the possible answers are DOS control character keys.

Why should task analysis be accomplished before writing evaluation instruments?

A. Task analysis determines training requirements and evaluation determines the success of the training.

B. Task analysis determines training requirements and evaluation determines the student's learning ability.

C. Task evaluation determines what the duty positions are and evaluation determines which duty positions should be manned.

D. Task analysis determines what the duty positions are and evaluation determines which students should be assigned to them.

In this example the word "because" is unstated before each of the alternatives. The question asks why and the answer is because. The why or for what reason question is a good way to determine if a student understands the concepts behind the task actions.

8-2. TRUE/FALSE QUESTIONS.

a. Good True/False questions are probably the most difficult to write. Since they are statements that require a trainee to determine if they are true or false, they must be true or false. There are very few statements that are true all of the time. Similarly there are very few statements that are false all of the time.

True or False: The earth is round.

b. Seems easy at first but it would be difficult to explain to a trainee that his or her answer is wrong, no matter which one was picked. The earth is round, sort of. It 's also egg shaped, sort of. There are much better ways to find out what a trainee knows about the earth's shape than to ask true or false questions.

Examples of True/False questions are:

In The city of Austin, a vehicle may make a right turn on a red light provided the vehicle is in the right lane, there is no traffic coming from the left, and there is no sign prohibiting such a turn. True of False?

or the short version;

Vehicles may, under certain conditions, make a right turn on a red light. True or False?

c. In both examples the answer sought is true. In the first example a true answer would indicate that the trainee knows that in Austin a driver can turn right on red if there is no traffic and that there are signs at some intersections prohibiting right turns on red. A true answer to the second

example indicates that the trainee knows that somewhere in the world it's ok to make a right turn on red, sometimes. Actually, the second example is a "freebie". Almost anything is ok somewhere, sometime.

8-3. CONSTRUCTED RESPONSE.

a. Constructed Response items are most beneficial when recall of specific terminology or facts is required. In the classical sense these are the old fill in the blank questions and are well suited for on-line presentation. Care should be exercised when developing fill in the blank questions to avoid taking verbatim statements from a Technical Order (TO) or regulation and then attempting to pick a work to leave out. The best way to write a constructed response question is the same as a multiple choice question: Identify the problem and then ask a question that can be answered. The only difference is that the trainee must recall the answer without having choices to pick from. Examples are:

What is the first component that should be removed from a J-79 engine during a phase inspection? _____

On Texas highways the maximum speed limit is _____ miles per hour.

b. In the second example the "miles per hour" is required to insure that the trainee knows it is miles, not kilometers, that is required. Again it is essential that the question be specific and be written so that it is completely obvious to the student what is being asked.

c. Because filling out a form is filling in the blanks, the AOTS computer system can use constructed response items, coupled with graphics, to simulate forms generation for on-line testing. A scenario (word picture) must be written that contains all of the information the trainee will need to complete the form. Then the form must be drawn on the computer and the constructed responses that are acceptable for each blank must be input into computer memory.

d. In another vein this methodology can be used to obtain a long or essay response. Since computer systems only know what they have been told, essay answers should be limited to off-line use. Essay answers may be given orally or in writing. In either case you must devise a question. Then you must provide an outline, in the form of bullet statements, that contains the minimum information that a trainee must include in answering the question. If the question is to be given orally, the evaluator must mark the bullet statements as correct or incorrect as the trainee is providing the answers. If the question is given in writing, the evaluator must use the bullet statements as a benchmark while grading the question. In either case the results will have to be entered into the AOTS system, manually or by optical mark reader. This same methodology can be used to

provide detailed guidance to an evaluator for use during an over-the-shoulder evaluation.

An example is:

Describe corrosion that required correction and point out the most likely places for its occurrence.

Description:

_____ Any rust spot bigger than a dime.

_____ Any bubble in the paint.

Location:

_____ Inside wheel wells.

_____ Leading edges of the flaps.

_____ Leading edges of the trim tabs.

e. The trainee may well provide more information but what's listed would be the minimum. The evaluator will have to listen to what's being said and check off the answers. Again, the Oral Test Guide gives the evaluator a method of determining what the trainee knows about the task and provides a standard with which to judge the trainee.

8-4. MATCHING.

a. Matching questions are the old school teacher 's standby, and offer a quick way to cover the material in several chapters without a lot of work. With some effort and thought, matching can be used effectively. The typical matching question consists of a stem that provides the trainee with the question and instructions for completing the question, followed by two lists of items. Example:

Match the state capitols in column B to their states in column A. Place the letter that represents the state capitol in the blank beside the appropriate state.

A		B	
____	Alabama	A.	Augusta
____	California	B.	Austin
____	Maine	C.	Montgomery
____	Texas	D.	Sacramento

b. One of the best uses for matching questions is to determine if a trainee can sequence events or actions correctly. With this method only one column is needed:

Sequence, in chronological order, the steps for developing position qualification training. Put letter A in the blank beside the first step, letter B beside the second step, etc.

____ Develop Training
____ Perform Task Analysis
____ Develop Behavioral Objectives
____ Develop Evaluation Instruments

8-5. GRAPHICS.

a. Creating graphic displays is not complicated but it will not be easy. The process, as with any system, will be time consuming. This paper cannot provide a key stroke by key stroke process but it can provide some guidelines on when to use graphics, sources of graphics ideas, and limitations on tile use of graphics.

b. First, graphics can be incorporated into any of the test types. They should not be used indiscriminately, but should be used when a graphic will give more realism to the test or better provide the trainee with an understanding of the question. In other words, use a graphic when its use will enhance testing of a trainee's understanding of the task. For example, if the behavioral objective requires a trainee to know the check points in a hydraulic system, a line drawing of the system can be used. It is particularly effective if a line drawing is what the trainee should be using during actual task performance. The trainee then could place the cursor on the check point and possibly enter the correct reading. This approach would effectively kill several birds with one stone. First, assuming that references are required on the job and the trainee is taking the evaluation "open book," it forces the trainee to demonstrate that he or she knows how to use the references in a practical application. Second, it gives the evaluator a more complete picture of the trainee's knowledge of the hydraulic system than could be obtained from several multiple choice questions. And third, since the trainee has demonstrated an understanding of the knowledges required it should reduce the time required to evaluate the "hands on" part of the task. It is the last "bird" that makes the graphic worth while - resources are scare and time is money.

c. This same principle applies to any of the aircraft systems and components. It is equally applicable to such things as building search procedures, positioning troops in geographic areas during exercises, or reading UTM grids.

d. Sources of graphic ideas are abundant. TOs have pictures and block diagrams of the aircraft systems. Career Development Courses have diagrams. These sources are ideal because they are used on the job and for upgrade training. The Field Training Detachments are another good source. And don't forget such publications as AIRMAN and AIR FORCE Magazine.

e. Building graphics is much like making a motion picture. A story board should be developed. A story board is a single sheet or series of sheets that contain a draft of the drawing and any words that will appear on the screen. Ideally, a different sheet is produced for each screen presentation. The story board details the sequence of events that will occur as the question unfolds on the screen.

f. This is not as complicated as it might appear. The story board is just a plan that will permit a developer to visualize what the trainee will see before the work of building the graphic question on-line begins. It is better to plan first than to spend the time it takes to build a graphic and then find that it can't be used.

g. Actually building the graphic is not all that complicated but it will take a lot of time. One way to put the graphic in the system is to literally trace it. Use the bit or "scratch" pad. Place the drawing on the bit pad and trace it. Another adequate method is to make a transparency of the drawing and tape it to the computer screen. Then using cursor movements enter the line points in system. The words, .e. the questions, answers, and instructions, are entered separately. After everything is in, the complete question can be displayed on the screen.

h. As good as graphics can be, there are some definite limitations connected with their use. The computer screen is limited in size, and therefore does not lend itself to large detailed drawings. Remember, a question has to be presented on one or two screens (a screen is 80 columns wide and allows 20 lines from top to bottom to be used for the question's text and graphics - that roughly equates to one third of a standard letter). There is a limit to the amount a diagram can be reduced and still he effective.